MALIGNANT OSTEOCLAST-LIKE GIANT CELL TUMOR OF THE UTERINE IN A DOG

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ABSTRACT
In this case report an unusual case of an osteoclast-like giant cell tumor of the uterine is reported in 10 year old, Setter, female dog. Macroscopically a tumoral mass that measured 27x24x11 cm was situated from the base of cervix. Histopathologically atypic spindle-spheroidal shaped cells with high mitotic rate admixed with scattared osteoclast-like multinucleated giant cells were observed. Tumor cells were stained positive with antibodies against both vimentin, CD 117, LCA. In contrast, the same cells were not stained with antibodies against cytokeratin, CD 34, S100 and SMA. In summary, although rare malignant osteoclast-like giant cell tumor of the uterine in first reported in a dog.

Key Words: Dog, osteoclast-like giant cell, tumor, uterine

BİR KÖPEĠİN UTERUSUNDA MALĠN OSTEOKLAST-BENZERI DEV HÜCRELI TÜMÖR

ÖZ

Anahtar kelimeler: Köpek, osteoklast-benzeri dev hücre, tümör, uterus
INTRODUCTION
Osteoclast-like giant cells (OLGCs) are multinucleated cells of histiocytic lineage and have been identified in a wide array of neoplasms (3, 7, 8). In humans and animals osteoclast-like giant cell tumor (OGCT) has been reported in a number of extraskeletal locations (2, 4, 10, 12). OGCT are resembled giant cell tumor of bone (6). Giant cell tumors that involving soft tissues such as subcutaneous fibrous tissue, fascia, tendon, tendon sheets, muscle have been reported in cat, dog and horses (4, 5, 15). Also addition the this tissues Haziroglu et al (2005) (6) firstly reported OGCT arising from visceral organ in animals. In humans OGCT has been diagnosed in visceral organs including the uterus, kidney and pancreas (2, 8, 16, 17). In consequence the case reported here, which involves malignant osteoclast-like giant cell tumor of the uterine in a dog, is very unusual documentation.

MATERIALS AND METHODS
A 10-year-old, Setter, female dog was brought to clinical department with complaint lack of appetite. The dog was sterilized three years ago. Clinically a mass was palpated on abdominal examination. The dog was euthanized and then the necropsy was done. The tissue samples initially were fixed in 10% buffered formalin for histological examination. Subsequently, sections were cut in 5 μm in thickness, one for routine haematoxylin and eosin (H&E) method, the others for adhesive slide for immunoperoxidase staining. The streptavidin biotin-peroxidase method was done. Initially; slides were put in 0.3% hydrogen peroxide in methanol for 20 minutes to blocked endogenous peroxidase activity and then incubated with normal goat serum for 20 min at 40°C. Afterwards sections were incubated for one hour at 40°C with each of the following monoclonal antibodies (all obtained from Dako/Denmark and all used at a 1:500 dilution) against vimentin: cytokeratin; Smooth Muscle Actin (SMA), CD 117, CD 34, S100, LCA (Leucocyte Common antigen, CD45). Sequential incubation with biotinylated goat anti-rabbit IgG and streptavidin-peroxidase reagent (Dako/Denmark) was done. 3-amino-9-ethyl-carbazole (AEC, Dako/Denmark) was used for colour labelling for five minutes at room temperature and then counterstain was done with haematoxylin. Following each incubation step, phosphate buffered saline (PBS) solution (except the step using normal goat sera) was used for washing of the sections. As a control step, sections were treated as above replacing the various primary antibodies with normal rabbit sera.

RESULTS
Macroscopically the tumoral mass was measured as 27x24x11 cm and it was situated from the debris of cervix. On the cut surface of it; well circumscribed, mostly soft, and yellowish with small hemorrhage areas were observed. The tumoral mass had any relationship with other structures. Microscopical examination of the tumor revealed sheets of atypical, pleomorphic, spindle-spheroidal shaped cells with hyperchromatic nuclei and with high mitotic activity. Admixed with
these atypic cells numerous osteoclast-like giant cells which contained large numbers of bland nuclei. Widespread haemorrhagic, oedematous and necrotic areas were also observed (Figures 1a-c). No osteoid matrix, bone or cartilage was present. Tumor cells and osteoclast-like giant cells were stained positive with antibodies against both vimentin (Figure 2), CD 117 (Figure 3), LCA (Figure 4). In contrast, the same cells were not stained with antibodies against cytokeratin, CD 34 and S100. In addition to these results except for tumor surface area and vessels, tumor cells and osteoclast-like giant cells were not stained with antibody SMA (Figures 5a-b).

**DISCUSSION**

Ultrastuctural studies of multinucleated giant cells in the neoplasms presented revealed a marked resemblance to those described in giant cell tumors of bone in man (1, 8). Many investigators have appropriated a histioyte/monocyte origin due in part to the frequent presence of OGCT in areas of haemorrhage or necrosis. The giant cell components can be diagnosed in tumors. They are quite similar to giant cell malignant fibrous histiocytomas (MFH) and extraskeletal osteosarcoma (5, 12). Expression of cytokeratins (CKs) is generally confined to epithelia and their neoplasms but they are not specific tumor markers. On the other hand it was reported that the highly diverse expression patterns of CKs have been correlated with different pathways of epithelial differentiation (10). Neoplastic, predominantly spindle-shaped cells and osteoclast-like giant cells were positive for mesenchymal markers Vimentin, CD117 and LCA. In contrast, osteoclast-like giant cells, but they were not stained with epithelial markers such as cytokeratin. Also tumor cells and CD 34, SMA and S100. These results showed the mesenchymal origin of cells. In addition to these the peritumoral and
perivascular staining with SMA suggested that these tumors originate from the cervix. The giant cell variant could be confused with either fibrosarcoma with giant cells or osteosarcoma. In fibrosarcoma and osteosarcoma, the giant cell component is not the predominant cell type. Also any neoplastic osteoid or bone presence found in giant cell MFH.

Differentiation of OGCT from an extraskeletal osteosarcoma may be difficult. Less obvious and more localised presence or complete absence of osteoid and bone formation is important distinctive finding (3, 14). In the study, no osteoid matrix, bone or cartilage was present.
Our case OGCT contained a histologically malignant cell component and displayed aggressive behavior. In humans similar cases have been reported by other authors previously (7, 11, 13, 14, 17) but the present report with the histopathological and immunohistochemical findings, is the first candidate case of malignant OGCT tumor of uterine in a dog.

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